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We Claim:

1. A composition comprising:

- a radionuclide, optionally as part of a compound or complex,
- a targeting agent, and
- iodide ions or a compound which releases or generates iodide ions, where the iodide ions aid in stabilizing the composition against degradation thus maintaining high radiochemical purity of the composition.

2. The composition of claim 1, wherein the iodide ions are provided by an iodide salt in the composition.

3. The composition of claim 1, wherein the iodide ions are provided by an alkali metal iodide salt in the composition.

4. The composition of claim 1, wherein the radionuclide is associated with a targeting agent.

5. The composition of claim 4, wherein the targeting agent is a peptide, oligonucleotide, antibody, peptidomimetic or small organic compound which has specific binding affinity targeting it to at least one tissue of a biological system.

6. The composition of claim 4, wherein the targeting agent is associated with the radionuclide by being bonded to a complexing moiety which complexes the radionuclide.

7. The composition of claim 6, wherein the targeting agent bonded to a complexing moiety is represented by the formula:

$$A—CZ(B)—[C(R^1R^2)]_n—X$$

wherein A is H, HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC or R^4; B is H, SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; X is SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; R^1, R^2, R^3 and R^4 are independently H or straight or branched chain or cyclic lower alkyl; n is 0, 1 or 2; provided that: (a) where B is $—NHR^3$ or $—N(R^3)$-

(peptide, oligonucleotide, antibody or small organic compound), X is SH and n is 1 or 2; (b) where X is —NHR^3 or —$N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound), B is SH and n is 1 or 2; (c) where B is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC, X is SH and n is 0 or 1; (d) where A is H or R^4, then, where B is SH, X is —NHR^3 or —$N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) and where X is SH, B is —NHR^3 or —$N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound); (e) where X is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH; (f) where Z is methyl, X is methyl, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH and n is 0; and (g) where Z is SH and X is SH, n is not 0; and wherein the thiol moiety is in the reduced form and the complexing group is capable of being covalently linked to the peptide, oligonucleotide, antibody or small organic compound.

8. The composition of claim 5, wherein the targeting agent is a somatostatin receptor binding peptide.

9. The composition of claim 8, wherein the somatostatin receptor binding peptide is depreotide or P2045.

10. The composition of claim 1, wherein the radionuclide is Tc-99m.

11. A method for stabilizing a composition comprising a radionuclide to prevent or lessen the occurrence of the radionuclide degrading, the method comprising providing iodide ions in the composition.

12. The method of claim 11, wherein the iodide ions are provided by an iodide salt in the composition.

13. The method of claim 11, wherein the iodide ions are provided by an alkali metal iodide salt in the composition.

14. The method of claim 11, wherein the radionuclide is associated with a targeting agent.

15. The method of claim 14, wherein the targeting agent is a peptide, oligonucleotide, antibody, peptidomimetic or small organic compound which has specific binding affinity targeting it to at least one tissue of a biological system.

16. The method of claim 14, wherein the targeting agent is associated with the radionuclide by being bonded to a complexing moiety which complexes the radionuclide.

17. The method of claim 16, wherein the targeting agent bonded to a complexing moiety is represented by the formula:

$$A—CZ(B)—[C(R^1R^2)]_n—X$$

wherein A is H, HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC or R^4; B is H, SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; X is SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; R^1, R^2, R^3 and R^4 are independently H or straight or branched chain or cyclic lower alkyl; n is 0, 1 or 2; provided that: (a) where B is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound), X is SH and n is 1 or 2; (b) where X is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound), B is SH and n is 1 or 2; (c) where B is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC, X is SH and n is 0 or 1; (d) where A is H or R^4, then, where B is SH, X is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) and where X is SH, B is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound); (e) where X is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH; (f) where Z is methyl, X is methyl, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH and n is 0; and (g) where Z is SH and X is SH, n is not 0; and wherein the thiol moiety is in

the reduced form and the complexing group is capable of being covalently linked to the peptide, oligonucleotide, antibody or small organic compound.

18. The method of claim 14, wherein the targeting agent is a somatostatin receptor binding peptide.

19. The method of claim 18, wherein the somatostatin receptor binding peptide is depreotide or P2045.

20. The method of claim 11, wherein the radionuclide is Tc-99m.

21. The method of claim 15, wherein the biological system is a mammalian body.

22. The method of claim 21, further comprising administering the complex to a mammalian body and conducting scintigraphic imaging of the mammalian body.

23. A kit comprising:

(a) a targeting agent capable of being associated with a radionuclide,

(b) iodide ions or a compound which releases or generates iodide ions, which iodide ions prevent or lessen degradation of the radionuclide due to radiolysis or free ions, and

(c) components for generating a radionuclide capable of being associated with the targeting agent,

wherein the kit has two or three compartments, (c) is contained in a separate compartment from (a) or (b) and (a) and (b) may be in the same or different compartments.

24. The kit of claim 23, wherein the iodide ions are provided by an iodide salt.

25. The kit of claim 23, wherein the iodide ions are provided by an alkali metal iodide salt.

26. The kit of claim 23, wherein the targeting agent is a peptide, oligonucleotide, antibody, peptidomimetic or small organic compound which has specific binding affinity targeting it to at least one tissue of a biological system.

27. The kit of claim 23, wherein the targeting agent is capable of being associated with the radionuclide by being capable of being bonded to a complexing moiety which complexes the radionuclide.

28. The kit of claim 27, wherein the targeting agent bonded to a complexing moiety is represented by the formula:

$$A—CZ(B)—[C(R^1R^2)]_n—X$$

wherein A is H, HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC or R^4; B is H, SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; X is SH or $—NHR^3$, $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) or R^4; R^1, R^2, R^3 and R^4 are independently H or straight or branched chain or cyclic lower alkyl; n is 0, 1 or 2; provided that: (a) where B is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound), X is SH and n is 1 or 2; (b) where X is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound), B is SH and n is 1 or 2; (c) where B is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC, X is SH and n is 0 or 1; (d) where A is H or R^4, then, where B is SH, X is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound) and where X is SH, B is $—NHR^3$ or $—N(R^3)$-(peptide, oligonucleotide, antibody or small organic compound); (e) where X is H or R^4, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH; (f) where Z is methyl, X is methyl, A is HOOC, H_2NOC, (peptide, oligonucleotide, antibody or small organic compound)-NHOC, (peptide, oligonucleotide, antibody or small organic compound)-OOC and B is SH and n is 0; and (g) where Z is SH and X is SH, n is not 0; and wherein the thiol moiety is in the reduced form and the complexing group is capable of being covalently linked to the peptide, oligonucleotide, antibody or small organic compound.

29. The kit of claim 23, wherein the targeting agent is a somatostatin receptor binding peptide.

30. The kit of claim 29, wherein the somatostatin receptor binding peptide is depreotide or P2045.

31. The kit of claim 23, wherein the radionuclide is Tc-99m.